

# MONTHLY WEATHER REVIEW,

JUNE, 1879.

(General Weather Service of the United States.)

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WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

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## INTRODUCTION.

In preparing this REVIEW the following data, received up to July 14th, have been used, viz: the regular tri-daily weather charts, containing the data of simultaneous observations taken at 122 Signal Service stations and 12 Canadian stations, as telegraphed to this office; monthly journals and means 127 and 145 respectively, from the former; reports from 37 Sunset stations; 204 monthly registers from Voluntary Observers; 37 monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; monthly reports from Voluntary Observers in, and the local Weather Services of, the States of Iowa and Missouri; reliable newspaper extracts; special reports.

## BAROMETRIC PRESSURE.

Upon chart No. II is shown by the isobaric lines the general distribution of atmospheric pressure, as reduced to sea-level, for the month. The general pressure on the Atlantic and Gulf coasts has been normal or slightly below, while in the interior for the Lakes, Mississippi valley, Tennessee and Ohio valley it has been considerably above the normal, reaching nearly 0.05 above on the Upper Lakes. As might be expected, from the frequency of storm paths traversing it, the Northwest was somewhat below the normal. The Pacific coast averaged nearly 0.04 below.

The *Local Barometric Ranges* have been comparatively small, and have varied as follows: Pacific coast, 0.15 at San Diego to 0.40 at Roseburg, Or., and 0.56 at Red Bluff; Western Plateau, 0.57 at Winnemucca to 0.78 at Salt Lake; Rocky Mountains, 0.45 at Santa Fe to 0.67 at Virginia City; Summit of Pike's Peak, 0.31; Gulf States, 0.24 at Key West to 0.47 at Montgomery, 0.42 at Galveston and 0.58 at Corsicana; Atlantic States, 0.42 at Jacksonville, 0.41 at Cape Lookout, 0.75 at Cape May, 0.77 at Newport and 0.68 at Eastport, and in the interior, 0.55 at Augusta, 0.71 at Lynchburg, 0.88 at Albany; Summit of Mt. Washington, 0.85; Ohio valley and Tennessee, 0.86 at Columbus to 0.52 at Memphis; Lake region, 0.69 at Oswego to 1.07 at Milwaukee and 0.95 at Duluth; Northwest and Eastern Slope of Rocky Mountains, 0.71 at St. Paul to 1.15 at Breckenridge and 0.73 at Deadwood; 1.06 at North Platte, 0.96 at Dodge City and 0.89 at Fort Sill.

*Areas of High Barometer.*—Of these, four have been sufficiently marked to merit a description.

No. I.—The area described as No. IX in the *May Review* was central in Minnesota on the morning of the 1st; barometers at Bismarck 30.47, Breckenridge 30.39, or 0.50 above normal at each station—the highest barometer reported during the month. Moving nearly due south it was central over western Kansas on the morning of the 2nd. Its course thence was S-SW., being central in western Texas at midnight. By morning of the 3rd it had passed into Mexico. This area was accompanied by the minimum temperatures for the month for the entire Rocky Mountain slope, Missouri and Rio Grande valleys, Western and Eastern Gulf, Tennessee, the western portion of Upper Lakes, Mississippi and Ohio valleys. A minimum temperature of 31° was reported at Pembina the morning of the 1st and at Cheyenne of 32° the 2nd. The maximum temperatures on these dates, of 96° at Boston on the 1st, 103°.5 at Los Angeles, 100° at Sacramento on the 2nd, and 109° at Visalia on the 3rd, in connection with low areas Nos. I and II, are especially noticeable. Frosts, not severe, were reported in Iowa on the 1st and 2nd, and ice an eighth of an inch thick in central Wisconsin on the 2nd, but no damage resulted to crops. The following high winds accompanied this area: On the 1st, Escanaba, 28 miles; Chicago, 26; Milwaukee, 25;

Cleveland, 25; Galveston, 28; 1st and 3rd, Indianola, 36 miles. Cautionary Signals were hoisted on the morning of the 2nd at New Orleans, Mobile and St. Marks, but are not justified by reports yet received, a maximum wind of 19 miles being reported from New Orleans. This area caused a severe "norther" in the Gulf of Mexico, from which four vessels were shipwrecked at or near Santa Ana, Mexico.

No. II.—This area, advancing from the Northwest, central at midnight of the 5th at Pembina, was north of Duluth on the morning of the 6th; Duluth barometer 0.28 above normal. Moving S. of E. on the morning of the 7th it was central over northern Michigan; Escanaba barometer 0.34 and Alpena 0.30 above normal. Thence moving SE. it was over Lake Erie the morning of the 8th; Erie and Cleveland barometers 0.28 above normal, and by midnight had passed off the Jersey coast. This area was accompanied by the minima temperatures for the month for eastern Michigan, Lower Lakes, eastern Ohio valley, Middle Atlantic and New England States, except Connecticut. The following minima were reported: 6th, Pembina, 32°; 7th, Parry Sound, 31°; 8th, Rockliffe, 32°. The 40° isotherm of minima temperatures included on the 6th northern Minnesota and northern Michigan; 7th, Michigan, parts of Wisconsin, northwestern Pennsylvania, western New York and northern portion of New England. Light snowstorms were reported from northern New England and Canada night of the 6th and morning of the 7th, injuring crops. On the 7th damaging frosts were reported from central Wisconsin and northern New England. Light frosts (6th–9th) were reported variously from Iowa, Michigan, Ohio and northern portions of Pennsylvania, New Jersey, New York and New England. Cautionary Signals were hoisted on the morning of the 6th on the Lower Lakes from Port Huron east to include Oswego, all of which were fully justified, the winds attaining velocities ranging from 25 miles at Buffalo to 32 at Toledo. Winds exceeding 25 miles, for which no signals were hoisted, were reported as follows: Morning of the 6th, Milwaukee, 29 miles; afternoon of 6th, Escanaba, 28; Alpena, 28. The advance of this area in conjunction with low area pressure No. II induced the very high winds experienced on the Middle Atlantic coast during the 6th, which are given in connection with that area.

No. III.—This area followed sharply the low area pressure No. IV, and showed itself central near Lake Winnipeg, Manitoba, the morning of the 16th; Duluth barometer 0.18 above the normal; by midnight the barometer was 0.32 above the normal at Duluth, north of which the pressure was then central. Moving slowly SE. it was central over Lake Superior during the 17th, and by the morning of the 18th was between Escanaba and Marquette; the barometers reading respectively 0.47 and 0.45 above the normal; the isobar of 0.40 above the normal then included parts of Minnesota and Michigan and all of Wisconsin. Keeping the same general direction, on the morning of the 19th it was central over the southern part of Lake Huron, and on the morning of the 20th in central Maryland; thence it moved south, with slowly diminishing pressure, passing off the Carolina coast on the morning of the 21st. The lowest minima temperatures reported were 16th, Marquette, 49°; 17th, Marquette, 37°; Escanaba, 38°; frosts in Wisconsin, Pennsylvania and Ohio; 18th, Saugeen 39°; frosts in New Jersey and Ohio; 19th, Saugeen, 38°; frosts in New York and Maine. The lowest temperatures for the month accompanied this area in Connecticut and in the South Atlantic States. In West Virginia frost was reported 60 miles west of Wytheville on the 19th and 20th. A portion of the Cautionary Signals (fully justified) which were hoisted for the low area pressure No. IV were lowered the morning of the 16th, somewhat early, as high winds from the high pressure continued at Escanaba afternoon 16th, 26 miles, Grand Haven 28, and 26 at midnight. Brisk winds were also reported at midnight on the Atlantic coast. Maxima: Sandy Hook, 28; Cape May, 26; and Cape Hatteras 25 miles. On the morning of the 17th Cautionary Signals were hoisted somewhat late on the North Carolina coast and Offshore on the Jersey coast. Maxima velocities had been reported at Cape Henry, 27 at Kittyhawk, 33 Cape Lookout, 25, and Cape May, 28 miles. The signals were lowered at noon on the Jersey coast, justified as to direction, with a velocity of 24 miles reported at Sandy Hook. The Carolina signals having been generally justified were lowered the afternoon of the 17th. Midnight maxima velocities of 28 miles at Sandy Hook and 25 at Cape Lookout were reported, followed by 28 miles at Cape Lookout and 26 at Cape Henry on the following morning. The winds continuing brisk on the Carolina coast, Cautionary Signals were hoisted on the morning of the 19th as far south as Cape Lookout, where a velocity of 30 miles preceding report and 28 at that time had been reported. These signals were lowered at midnight of the 20th, having been fully justified; NE. winds from 25 to 62 miles being reported from the various stations.

No. IV.—This area first appeared on the Southern Pacific coast the morning of the 22nd; Los Angeles barometer 0.03 above the normal. Its course was almost due north and by the morning of the 23rd the Red Bluff barometer was 0.23 above the normal. The rain in Oregon of the 21st, following low area No. VI, continued during the 22nd and 23rd, with fresh westerly winds, while fresh to brisk westerly, winds with no precipitation, were reported from California during the 22nd. By the morning of the 24th the centre had passed into British Columbia.

*Areas of Low Barometer.*—Upon chart No. I are shown the tracks of the centres of nine areas. The greater number of the storms have passed NE. through Dakota and Minnesota into Manitoba or Canada, and no centre has passed south of the Ohio valley. The maximum temperatures in New England and Middle Atlantic States occurred during the advance of low areas No. I on the 1st and 2nd, and No. VIII on the 27th to 30th. The advance of area No. VIII was also marked by the highest temperatures for the month in the Upper river valleys and the Lakes. In the Gulf and South Atlantic States the highest temperatures were reported during the progress of area No. IV.

No. I—is a continuation of low area No. XV, described in the *May Review*. Central in Indiana on the morning of the 1st it moved during the day northeastward reaching at midnight the St. Lawrence valley, whence its course east left its centre the morning of the 2nd on the Maine coast. At this time there was an elongated trough of low pressure extending from Nova Scotia to Alabama, between high area No. I and a probable high area off the South Atlantic coast, rain and fresh NW. winds in Tennessee and Ohio valley, fresh to brisk SW. winds with fine weather on the Middle and South Atlantic coasts. This trough, moving east, by the afternoon of the 2dd, had induced brisk winds on the North Carolina and New Jersey coasts, where Cautionary Signals were ordered from Sandy Hook to Cape Lookout, somewhat late for Cape May and Kittyhawk, where 28 and 27 miles had been respectively reported. Light rains along the Atlantic coast and the precipitation in advance of depression No. II kept the pressure nearly stationary during the 3rd, with continued brisk to high southerly winds, along the Carolina and Jersey coasts. On the 4th low area No. II changing its course to the NE. the wind changed to the NW. and permitted the lowering of the signals on the Jersey coast in the morning and on the Carolina coast in the afternoon. These signals were justified by velocities ranging from 25 to 32 miles.

No. II.—The centre of this area which was in Manitoba the morning of the 3rd, following a SE. course reached Duluth by midnight, where the barometer had fallen from 0.09 above the normal to 0.23 below. Light local rains prevailed during the day in Minnesota and Dakota. Its course was then east, passing over Lake Superior during the day, it was central at midnight of the 4th near Rockliffe. Heavy rains prevailed during the day in New England, and light rains in the Upper and Lower Lakes. During the forenoon of the 5th, the depression disappeared passing into the Gulf of St. Lawrence. No signals were ordered for the primary depression which generally showed little energy. A subsidiary area developing from the rear of the low trough on the 6th was, however, characterized by the highest winds of the month for the Canadian and New England coasts. The pressure rose rapidly in the St. Lawrence valley from morning to midnight of the 5th, (0.29 above a normal rise at Toronto,) leaving at midnight a small depression over Michigan (from 0.04 to 0.07 only below the normal,) with gentle to brisk winds, partly cloudy weather along the Lakes, light local rains to the Northwest, and heavy local rains in Pennsylvania, with clear fine weather in Ontario. On the morning of the 6th an abnormal barometric fall of 0.22 was reported from Toronto, and an abnormal rise of 0.24 at Escanaba—the advance of high area No. II. The increased depression then covered Lake Ontario over which the barometer was 0.20 below the normal. Cloudy weather then prevailed from Michigan east, to include New England, with brisk west and south winds in Lower Lake region and Missouri, and light local rains, except heavy rain at Pittsburgh. Cautionary Signals were at once ordered for Lakes Ontario and Erie in connection with this depression and high area No. II, which were justified as shown elsewhere. By the afternoon of the 6th the secondary depression following the course of the primary area was central over Maine, the Portland barometer reading 0.33 below the normal. An abnormal barometric fall of from 0.08 at Atlantic City to 0.21 at Portland, together with the rapid advance of high area No. II, had induced strong winds off the Maine, (max. 29 miles,) Carolina (max. 29 miles,) and Jersey coasts, with a maximum of 52 miles at Cape May. Cautionary Signals were ordered from Smithville along the coast northward to include Eastport, Me., and continued on the Jersey and Carolina coasts until the afternoon of the 7th, and were lowered at New England stations from midnight of the 6th to afternoon of the 7th, somewhat early for Boston and Portland. The Jersey coast signals were changed to Off-shore at midnight of the 6th, and Lewes and Eastport likewise changed on the morning of the 7th. These signals were all justified by succeeding N. to W. winds, of velocities ranging from 26 to 40 miles. By the morning of the 7th the storm was central in St. Lawrence Bay. Velocities of 55 and 50 miles were reported from Father Point at the morning and afternoon reports of the 7th, with a maximum velocity of 66 miles at 7 a. m. Several vessels were badly injured in the St. Lawrence river on the 7th, and one dismasted near Cape Ann in a squall the night of the 6th.

No. III.—This area first appeared on the 3rd on the South Pacific coast; the San Diego barometer at the afternoon report reading 0.10 below the normal, the isobar of 29.90 including all of southern California. Its course was north, and by midnight of the 4th it was central in the upper Sacramento valley. On the 5th, changing its course to the east, it was central at midnight in southwestern Idaho; the barometer yet being below the normal on the Central and North Pacific coast. Strong NW. winds and consequent damage to three vessels were reported off San Francisco. Passing through southern Idaho on the 6th its centre appeared to be in western Wyoming at midnight of the 6th. At this time the line of 0.20 below the normal included all of Colorado and the depression divided. Its southern edge, in passing through Utah, induced exceedingly high winds, a train being blown from the Utah Western track west of Salt Lake City on the afternoon of the 6th, killing one person and wounding one. The maximum velocity for the month occurred that day at Salt Lake City, 34 miles SE., and at Pioche 40 S. Following an ENE. course the main depression was central in western Dakota on the afternoon of the 7th. Bismarck barometer 0.32 below the normal, when brisk to high winds and partly cloudy weather were reported from the Northwest, Upper Missouri and Mississippi valleys. Cautionary Signals were ordered for Duluth, (late,) Marquette, Escanaba and Milwaukee, which were lowered on the 8th at Milwaukee, the rest on the 10th. They were not justified as the depression in Central Dakota at midnight of the 7th moved northward, and on the morning of the 8th had passed into Manitoba. The secondary depression commenced with this area during the 7th, passing over the main Rocky range, included by midnight all of Colorado and western Kansas in the isobar of 0.20 below the normal. During the 8th the area remained nearly stationary in Kansas,

but by the morning of the 9th was central in Nebraska, at which time there was a low barometric trough extending from northern Texas to the Canada line. The main centre traveling northeast was by midnight central near Duluth; barometer 0.40 below the normal, while violent wind, hail and rain-storms prevailed in Kansas, doing great damage. Hail-stones at Easton, Kansas, reported eleven inches in circumference, and at Wichita weighing twelve ounces. The wind at Leavenworth attained a velocity of 48 miles S., and 2.49 inches rain-fall in four hours and ten minutes, and 4.30 inches at St. Joseph in 24 hours, ending 3 p. m. the 9th were reported. The town of Delphi, Ottawa county, Kansas, reports 32 buildings destroyed, two persons fatally injured and fourteen others hurt. Hail-stones fell weighing from 12 to 14 ounces. Glasgow, Asheville, Lawrence, Stanton, Easton, Kickapoo and Beloit, Kansas, were also reported seriously damaged during same day by similar storms. Numerous thunder-storms were reported. During the day heavy rains fell in the Mississippi and Ohio valleys and on the Upper Lakes. On the morning of the 10th the centre was over Lake Superior and passed into Canada. Signals were hoisted at Alpena and for Lake Michigan at midnight of the 9th and lowered the morning of the 10th. They were justified, except Alpena

No. IV.—This depression appeared on the Oregon coast before the preceding area had entirely disappeared. Its course was SE. through Oregon, Idaho and Utah during the 10th and 11th, on which days moderate rains fell on Pacific coast as far south as Visalia, and over the Northern and Middle Plateau Districts. During the 12th it moved slowly E. through northern Colorado; easterly winds and heavy rains prevailing in the Missouri valley. Central at midnight in western Kansas thence it followed a direction E. of N. during the 13th, and at midnight was east of Bismarck; barometer 0.29 below the normal. Cautionary Signals were then ordered for Lake Superior and part of Lake Michigan. On the morning of the 14th moving easterly it was central in Minnesota and in the afternoon in western Wisconsin; La Crosse barometer 0.50 below the normal, with the abnormal line of —0.40 including Minnesota, eastern Iowa, Wisconsin and part of Michigan, with heavy rains and brisk S. to E. winds. Signals had been ordered for the rest of Lake Michigan in the morning and followed for the remaining lake stations during the afternoon. These signals were ordered in ample time and were justified by wind ranging from 26 to 35 miles, except at Port Huron and Detroit, where, however, a NW. wind of 24 miles prevailed. Continuing its course S. of E. it was central over Lake Michigan the morning of the 15th; Milwaukee barometer 0.59 below the normal, the lowest reported during the month. The isobar of 0.50 below the normal at this time covered the greater part of the Upper Lakes. Brisk southerly winds then prevailed along the Middle Atlantic coast, and rainy weather was reported from Lower Lakes, New York and New England. At noon Cautionary Signals were ordered on the Atlantic coast from Eastport south to include Smithville. During the day heavy rains, with N. to E. winds, prevailed in New England, brisk southerly winds on the Middle Atlantic coast; while the wind on the Upper Lakes changing to N., with clearing weather, allowed the signals for Superior to be lowered, followed by the other lake signals on the morning of the 16th, when the storm-centre had reached Connecticut. The centre moved SE. off the coast the afternoon of the 16th, with brisk N. and NW. winds prevailing from Maine to South Carolina. Signals were then lowered on the Atlantic coast; all having been justified by velocities from 25 to 36 miles, except Eastport, where NE. 19 miles was reported.

No. V.—This area was at no time central in the United States. Central near Lake Winnipeg the morning of the 20th, it moved easterly and disappeared on the 21st, being probably NE. of Lake Superior that morning. Gentle to fresh southerly winds, with considerable rains, were reported from northern Texas to Lake Superior. The lowest barometer was reported from Pembina a. m. of 20th, 0.25 below the normal. No signals were ordered.

No. VI.—This area was first shown by the barometer falling below the normal on the North and Central Pacific coast on the 20th. Moving SE. during the 21st from NW. Oregon to central Idaho; Boise barometer 0.31 below the normal at midnight; it was followed during that and the succeeding day by fresh westerly winds and rain in Oregon. On the 22nd, following a nearly NE. course, it passed through northern Utah and Wyoming, and by morning of the 23rd was central in eastern Dakota, light rains having been reported in Montana and northwestern Dakota. Thence it moved NE., being central in NW. Minnesota at midnight of the 23rd, heavy rains and thunder-storms prevailing in its rear in the Northwest and Upper Missouri valley. At no time was any rain reported in front of its path. By the morning of the 24th it had passed into Manitoba.

No. VII.—This depression probably had a common origin with No. VI. Central on the afternoon of the 23rd in eastern Colorado. It moved slowly to the Northeast, and on the afternoon of the 24th was central in western Iowa; Omaha barometer 0.25 below the normal, and thence northerly by midnight to eastern Minnesota. Heavy rains were reported from the Mississippi and Missouri valleys, with brisk southerly winds from the Mississippi valley and Upper Lakes. By the morning of the 25th the storm-centre had passed NE. beyond our stations. No signals were ordered, and but one station (Alpena) reported a wind (26 miles) which would have justified a display.

No. VIII.—This area first appeared in northwestern Dakota on the afternoon of the 25th, and moving nearly easterly, was central east of Pembina, barometer 0.16 below the normal, followed by moderate rain-fall and fresh westerly winds in the Upper Missouri valley. During the 26th its course was nearly easterly, and on the morning of the 27th its centre was in Canada, north of Lake Huron, rain and fresh to brisk southerly winds having been reported in the preceding twenty-four hours from the Upper and Lower Lakes. During the 27th fresh to brisk S. to W. winds, with light rain fall, was reported from the Lower Lakes and

New England, while the course of the area through Canada is uncertain. On the morning of the 28th it was central in northern Vermont; Montreal barometer 0.32 below normal, at which time brisk SW. winds prevailed on Middle Atlantic coast, with generally clear weather, except rain on North Carolina coast. During the day heavy rains fell in the Middle Atlantic States, and a violent local storm was reported from Baltimore, where it did much damage. Cautionary Signals ordered at noon were lowered during the afternoon on the Carolina and Jersey coast. Though hoisted somewhat late for the Carolina coast, they were justified by winds ranging from 28 to 40 miles. The depression moved NE., becoming deeper, and on the morning of the 29th disappeared into the Gulf of St. Lawrence, the barometer at Sydney being 0.42 below the normal, while the abnormal line of  $-0.30$ , extending itself south to include the Jersey coast, brisk SW. winds continued on the Carolina coast. Cautionary Signals were hoisted on the morning of the 29th on the Carolina and Off-shore on the Jersey coast and lowered at midnight. The signals were justified by winds ranging from 29 to 36 miles.

No. IX.—This area appeared on the Middle Pacific coast on the morning of the 28th and following a course generally NE. crossed the northern parts of California, Nevada, Utah and Wyoming, reaching central Dakota the morning of the 30th. Thence its course was nearly north and at midnight of the 30th it was central in northwest Dakota, the barometer at Bismarck being at that time 0.36 below the normal. Its progress was marked by gentle winds without precipitation on the 28th. On the 29th light rains prevailed in northern Montana followed on the 30th by heavy rains in the Northwest and Upper Missouri valley with brisk to high southerly winds in the Upper Missouri and Mississippi valleys. Generally clear weather prevailed during the 30th on the Upper Lakes with brisk S. to E. winds not sufficient to require signals.

## INTERNATIONAL METEOROLOGY.

Three charts of International Meteorology are issued with this *Review*; No. IV, and two for *November*, 1877, which are not numbered. On the first are laid down the tracks of centres of low barometers and drawn the lines of equal precipitation. On the second are charted the lines of mean pressure and temperature and the force and prevailing direction of the wind at 7:35 a. m., Washington mean time, for that month. The two charts are based on the daily charts of the International Bulletin.

On chart No. IV are shown the probable tracks of storm-centres over the oceans, deduced from data received at this office up to July 3rd, and in the upper right-hand corner will be found an index to the same. The following is a brief notice of the same, and also of some storms over the Southern Hemisphere:

*North Atlantic Ocean.*—No. I probably developed on April 23rd about  $55^{\circ}$  N.,  $40^{\circ}$  W.; it was attended by westerly gales and high seas from the 24th to the 26th, between  $35^{\circ}$  and  $15^{\circ}$  W. and  $45^{\circ}$  and  $55^{\circ}$  N., and on latter day moved southeastward off the Irish coast towards France. No. II probably developed over the Bay of Biscay on May 1st, after which it moved eastward over the Mediterranean. No. III appeared on the coast of Portugal on May 7th. No. IV appeared to the northwestward of Ireland on May 16th and afterward moved southeastward over Europe. No. V is a continuation of low pressure area No. X described in the *May Review*. No. VI developed on May 21st and 22d in the southern extremity of low pressure area No. VIII described in *May Review*; on the 23rd it moved northeastward between the Atlantic coast and the Bermudas, attended by heavy rains over latter, and possibly joined the preceding area on the 26th in the neighborhood of Newfoundland. No. VII advanced toward the British Isles from the northwest on May 24th and moved as shown on chart. From the 27th of April to the end of May high pressures prevailed over the North Atlantic between latitudes 40 and 55, with almost an entire absence of high winds, excepting occasional gales attending the storms already noticed. *South Atlantic Ocean.*—Ship Ferris S. Thompson, from San Francisco, 114 days to New York, June 15th, reported April 17th, 1879, passed Cape Horn; 18th, 3 a. m., heavy SE. gale; first officer washed overboard and drowned; bulwarks badly stove. Bark Lepanto (from Melbourne to New York) passed Cape Horn April 25th, 1879, and on the 27th had a strong gale from SSE. to SSW., with binding snow-storm, lasting 20 hours. *North Pacific Ocean.*—Five tracks are given on the chart, which probably indicate, somewhat correctly, the movement of the principal areas of low pressure, over the region covered, from March 28th to April 21st, 1879. *Indian Ocean.*—"February 12th, 1879,  $41^{\circ}$  23' S.,  $64^{\circ}$  48' E., N. strong, heavy cross sea; 13th,  $39^{\circ}$  46' S.,  $63^{\circ}$  53' E., W. strong, squally, heavy sea, shipped much water; 21st,  $33^{\circ}$  08' S.,  $45^{\circ}$  32' E., SE. to ENE., heavy gales, cross sea and rain; 22nd,  $31^{\circ}$  32' S.,  $45^{\circ}$  16' E., SE. to calm to NNW., heavy gales, heavy sea. A special account published in "*La Nature*" of the cyclone of March 19th, noticed in the *May Review*, will be found under "Notes and Extracts."

## TEMPERATURE OF THE AIR.

The isothermal lines on chart No. II show the general distribution of the temperature of the air for the month. By a reference to the table of average temperatures upon the same chart it will be seen that the temperature of the present month has been very generally about normal or below the average, except in Missouri valley, Middle and southeast Rocky Mountain Slope, where it has been from  $15^{\circ}$  to  $27^{\circ}$  above. On the immediate North Pacific coast, and in the St. Lawrence valley, it has been from  $3^{\circ}$  to  $3.5^{\circ}$  below. The Salt Lake temperature is erroneously reported as *above* on chart No. II. It should read *below*. The following comments on the temperature for the month have been received from special observers: Gardiner, Me.,